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What is the Continuity Correction Factor?

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A **continuity correction factor** is used when you use a continuous function to approximate a discrete one; when you use a normal distribution table to approximate a binomial, you're going to have to use a continuity correction factor. It's as simple as adding or subtracting .5: use the following table to decide whether to add or subtract.

Continuity Correction Factor

If $P(X=n)$ use $P(n - 0.5 < X < n + 0.5)$

If $P(X > n)$ use $P(X > n + 0.5)$

If $P(X \leq n)$ use $P(X < n + 0.5)$

If $P(X < n)$ use $P(X < n - 0.5)$

If $P(X \geq n)$ use $P(X > n - 0.5)$

Example:

If $P(X \geq 351)$, use $P(X > 351 - 0.5) = P(X > 350.5)$

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12 Responses to “What is the Continuity Correction Factor?”

1. 

Angie Widdows said:

[Oct 23, 09 at 9:46 am](#)

This makes perfect sense. I will be sure to print out this page so that I can use it for homework and quizzes. Without this example, I am not sure that I would remember all of it.



Lauren Schultz said:

[Nov 02, 09 at 7:20 am](#)

THIS WAS REALLY GOOD IN TERMS OF EXPLANATION. THIS THREW ME AT FIRST BUT ONCE I PRINTED THIS OUT IT WAS ALOT EASIER FROM THAT POINT ON...
THANKS!!



[Lisa Barcomb](#) said:

[Nov 08, 09 at 10:10 pm](#)

Well understanding these problems help especially with the blog . It was easier then the book trying to figure it out from there. Once I got on here I started reading it and it was clear on how to do the problems.



Rob said:

[Dec 03, 09 at 6:26 am](#)

WOW! This has helped so much! Thankyou!



Vanessa DuBarry said:

[Dec 14, 09 at 9:17 pm](#)

This explanation really helped and mainly because everything is in steps and that is the easiest way to learn something.



James said:

[May 23, 10 at 3:21 am](#)

what is the point of learning without understanding? There is no explanation of why $N+0.5$ or $n-0.5$



Stephanie said:

[May 30, 10 at 12:05 pm](#)

James,

The vast majority of students using this site are struggling traditional students who have traditional, bulky textbooks (where you'll find several hundred pages of explanation).

The tables and charts on this site are for reference and quick answers to sticky problems without all of the textbook bloviation! I'm not attempting to replace learning and understanding...just enhancing it.

Stephanie



Nick said:

[Sep 08, 10 at 3:22 pm](#)

James,

I also get frustrated when I can't get an explanation and got screwed up by this same concept. Here is a way I figured out to explain it. Let's make a simple example that X is # of heads out of 50 tosses. Let's use less-than or equal to for simplicity. Let's say we want $P(10 \leq X \leq 20)$. Numbers 10-20, inclusive, are "good outcomes." Since we are using a continuous variable (with decimals) to approximate the sum of discrete variables, anything between 9.5 and 20.5 will be rounded to 10 and 20 (discrete = whole #s only) so by EXPANDING the range to include leeway for rounding will give us a closer approximation since $X = 9.7$ is closer to meaning 10 good outcomes than 9. This idea of EXPANDING is at the heart of the whole matter.

Now we come to the strictly less than case $10 < X < 20$; so 10 and 20 are NO LONGER GOOD OUTCOMES. Remember that X is DISCRETE so $10 < X < 20$ is the same as saying $11 \leq X \leq 19$. Apply the same idea as before and your correction should again EXPAND this range to $10.5 \leq X \leq 19.5$.

Hope this helps, I could explain more, but I was trying to be brief (fail).

-Nick

P.S..if you're wondering what to do for a greater than/greater-than-or-equal-to...chances are you can flip your expression, ya dingus!



Lona said:

[Oct 28, 10 at 11:20 am](#)

I have a question about continuity correction with the given values are discrete. How would you show/describe The Area between 36.5 and 37 or between 37 and 37.5? Is that even possible since the given value is known to be discrete?



Muhammad Rafi said:

[Nov 18, 10 at 2:29 am](#)

I've seen the way in which the continuity correction is applied i.e. when to add 0.5 and when to subtract but I've still a question why to add 0.5 and why to subtract 0.5.

Regards
Muhammad Rafi
Lecturer in Statistics

11.



saad saeed said:

[May 21, 11 at 3:52 am](#)

This was really comprehensive and precise! thank you so much to who ever who put this up!

12.



Niki said:

[May 22, 11 at 12:39 am](#)

Okay, this makes sense! :D

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